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APW 1722

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	)	
	)	
Andrew BOOTH, et al.	)	Examiner: Emmanuel S. Luk
	)	
Application No.: 09/596,549	)	Art Unit: 1722
	)	
Filed: June 19, 2000	)	
	)	June 7, 2004
For: THICK FILM HEATER APPARATUS	)	

Director, Technology Center 1700
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PETITION UNDER 37 C.F.R. § 1.181 FOR WITHDRAWAL OF PREMATURE FINAL REJECTION

Sir:

Applicants respectfully petition the Commissioner to vacate the finality of the Office Action mailed on January 8, 2004. The new grounds of rejection set forth therein were prematurely made final, and Applicants therefore request that the Commissioner withdraw the finality of the Office Action, and direct that the non-final Office Action be remailed. The Commissioner is hereby authorized to charge any required Petition fee under 37 C.F.R. § 1.17 to Deposit Account No. 50-1710.

BASIS FOR PETITION

The facts supporting Applicants' request for withdrawal of the finality of the Office Action are set forth below, and supported by the attached Exhibits:

(a) Applicants received a non-final Office Action mailed on May 19, 2003 (Exhibit A). No Information Disclosure Statements have been filed by Applicants since the issuance of that Office Action.

(b) Applicants responded to the Office Action in their Amendment dated August 19, 2003 (Exhibit B). In that Amendment, minor changes were made to the independent claims. Specifically, Applicants' presented claim amendments that indicated that the resistive trace was "made of thick film ink." However, the primary reference cited in the rejections set forth in the Office Action issued May 19, 2003 was Juliano, which also included disclosure of the use of "thick film ink" to form a resistive layer. The primary purpose of Applicants' Amendment was to present detailed arguments to rebut the obviousness rejections of the claims over the combination of Juliano, Manov, and Riley on other grounds, as well as to rebut the inapplicable case law relied upon in the Office Action to support the improper combination of the cited art.

(c) Applicants received a final Office Action mailed on January 8, 2004 (Exhibit C). The Office Action withdrew the prior rejections over the combination of Juliano, Manov, and Riley, and introduced new obviousness rejections based on Lin et al. Lin et al. also discloses the use of thick film ink to form a resistive layer, but the new rejections otherwise fail to disclose or suggest all of the claim features.

(d) Applicants filed a Request for Reconsideration of Issuance of Final Rejection on March 8, 2004 (Exhibit D), in which arguments similar to those advanced herein were presented to the Examiner. Applicants requested that they be provided with a full opportunity to address the new grounds of rejection.

(e) An Advisory Action was mailed on April 8, 2004 (Exhibit E), in which the Examiner has refused to voluntarily withdraw the finality of the Office Action mailed January 8, 2004. This Petition is being filed within two months of the mailing date of that final refusal to withdraw the finality of the new grounds of rejection.

REMARKS

The standard for determining when a rejection may appropriately be made final is set forth at least in the Manual of Patent Examining Procedure. A new ground of rejection should not be made final unless it was (1) "necessitated by applicant's amendment of the claims" or (2) was "based on information submitted in an information disclosure statement filed during the period set forth in 37 C.F.R. § 1.97(c) with the fee set forth in 37 C.F.R. § 1.17(p)." *See* MPEP 706.07(a). Applicants submit that neither of these two criteria were met with respect to the new grounds of rejection in this instance, and that the Office Action was therefore improperly made final.

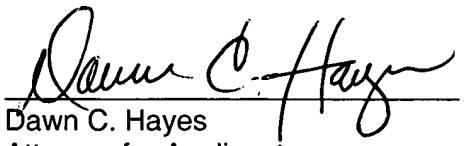
Applicants submit that the amendments to the claims to include the feature that the resistive trace be "made of thick film ink" did not necessitate that the new grounds of rejection be applied. That feature was disclosed in the primary reference relied upon in the first rejection, and was merely inserted into the independent claims to provide them with additional clarity. Rather, it was Applicants persuasive arguments regarding the improper rejection and inapplicable case law that necessitated that the prior rejections be withdrawn. Accordingly, the new grounds of rejection were not "necessitated by applicant's amendment of the claims". The new grounds of rejection were necessitated by Applicants' persuasive arguments, and therefore may not properly be made final.

CONCLUSION

Applicants did not present claim amendments, or file an Information Disclosure Statement, that necessitated the new grounds of rejection first asserted in the Final Office Action dated January 8, 2004. Applicants therefore request that the Commissioner withdraw the finality of that Office Action as improper and premature, and direct that the Office Action be remailed so that Applicants may have a full and fair opportunity to respond to the new grounds of rejection.

Applicants' undersigned attorney may be reached by telephone at (202) 625-3549. All correspondence should continue to be directed to our address as listed below.

Respectfully submitted,



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/596,549	06/19/2000	Andrew Booth	H-525US	2122

27160 7590 05/19/2003

PATENT ADMINSTRATOR
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EXAMINER
LUK, EMMANUEL S

ART UNIT	PAPER NUMBER
1722	17

DATE MAILED: 05/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

DOCKETED
CMID 213201-00054
Action Type RESPONSE DUE
Due/Final Dates 9/19/03 / 11/19/03
Atty REB Sec
Docketed by [signature] Date 5/23/03

MAY 27 2003

PTO-90C (Rev. 07-01)

KMZ/dk
213201-54

mc-17

Office Action Summary

Application No.	Applicant(s)	
09/596,549	BOOTH ET AL.	
Examiner	**Art Unit**	
Emmanuel S. Luk	1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 February 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-22 and 28-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-22, 28-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-3, 7-9, 14-19, 22, and 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Juliano et al in view of Riley and Manov et al.

Juliano teaches a thick film heater for injection mold runner nozzle having a tubular body (32) with a tubular heater core applied on the surface. A dielectric layer and resistive element thick film layer covers the heater surface that are printed on (Col. 6, lines 22-23). Further, an acrylic glaze layer coats the layers, while lead termination pads are in contact with the dielectric layer. The nozzle is shown to be non-flat and cylindrical in the Figures.

Juliano fails to teach silk-screened dielectric layer and contact pads, insulation layer over restrictive layer, an annular connector housing for mechanical connection of a

contact to each contact pad, ceramic housing, steel substrate and gold plated steel contact pad and the resistive layer having at least one resistive trace in a pattern that is discontinuous circumferentially and a plurality of traces.

In regards to the silk screened layers, this is a process limitation on structural claims. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted).

The acrylic glaze layer would act as an insulation layer on top of the resistive layer. The termination pads acting as contact pads are printed on (Col. 6, lines 61-61), the connector housing being a heater sheath (6) having wires that lead to the contacts.

Riley teaches a thick film circuit element having substrates and layers that are formed via silk screen (Col. 3, line 67) onto the surfaces of the substrate (12). The substrates can be made of ceramic (Col. 3, line 65), other substrates include stainless steel (Col. 2, lines 65-66) and noble metals, such as gold (Col. 1, line 41) for use in the circuit. Riley teaches the use of a variety of different materials in the substrates, this also suggests use in parts other than substrates including the housing and contact pads, such as a ceramic housing and gold plated steel on the contact pads.

In regards to claims 17-19, the dielectric strength of the dielectric layer, the insulation resistance and the thermal expansion coefficients are cause effective

variables that can be determined through routine experimentation. It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as through routine experimentation in the absence of a showing of criticality in the claimed properties such thermal expansion coefficient, resistance and dielectric strength. *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

In regards to the non-flat, or cylindrical, substrate surface, it would have been obvious to one of ordinary skill in the art to modify the surface because it is merely a change in form or shape. In Dailey et al, 149 USPQ 47 (CCPA 1966).

In regards to the resistive trace that is in a pattern that is discontinuous circumferentially, Manov et al teaches an electrical heater system having a heating ribbon that is discontinuous circumferentially (Fig. 2A). In fact, the Juliano teaches a spiral that can be also considered discontinuous circumferentially with the end of the spiral (43) curling back.

In regards to the plurality of traces, it would have been obvious to one of ordinary skill in the art to have a plurality of traces for a multiplied effect, in this case for improved heating. *In re Harza*, 124 PQ 378 (CCPA 1960). It would have been obvious to one skilled in the art to find the optimized pattern for heating from the traces through mere routine experimentation.

It would have been obvious to one of ordinary skill in the art to modify Juliano with silk screen printing of layers and materials for the elements as taught by Riley because it provides improved layering of materials and conduction of heat and a

discontinuous circumferential pattern as taught by Manov et al because it allows for the ends of the trace to be at the same end.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Juliano et al in view of Riley as applied to claims 1-3, 7-9, 14-19, 22, and 28-31 above, and further in view of Schmidt.

Juliano fails to teach a longitudinal slot in the substrate.

Schmidt teaches a band heater clamp arrangement for an injection molding machine. Schmidt teaches an inner sleeve having an axial slot that extends through the entire length that allows for the inner sleeve to expand and close as temperature rises, thus allowing for the different thermal expansion rates between the inner sleeve and outer sleeve (Col. 2, lines 41-47).

It would have been obvious to one of ordinary skill in the art to modify Juliano with a slot as taught by Schmidt because it allows for heater to compensate for the thermal expansion of the substrate that is located on the inner sleeve.

5. Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Juliano et al in view of Riley as applied to claims 1-3, 7-9, 14-19, 22, and 28-31 above, and further in view of Collins.

Juliano fails to teach the resistive layer comprises of a resistive trace and a lower-resistance conductive trace.

Collins teaches the formation of a thick film resistor and utilizes a resistive layer and a low-resistance conductive trace:

> Each of the networks was fabricated on insulative alumina substrates by direct writing of the resistive line pattern r using commercially available ruthenium-based inks of different compositions (different sheet resistivities), whereby each pattern was written to achieve a different final effective width of the line r for the resistor segments. Both segments of each resistor network were written with one and the same line width. The effective line widths of the low resistance segments were achieved by writing a selected number of resistive lines in a parallel configuration between conductive terminal bars connected to respective conductive terminations. (Col. 6, lines 15-26)

The low resistance segments being the conductive trace, thereby low resistance, that is located with resistive lines (resistive trace) that forms the resistive layer, the patterning allows for optimum use of the resistive layer.

It would have been obvious to one of ordinary skill in the art to modify Juliano with a resistive layer comprised of a resistive trace and a conductive trace as taught by Collins because it allows for optimum configuration for the resistive trace pattern in the heater.

6. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Juliano in view of Riley as applied to claims 1-3, 7-9, 14-19, 22 and 28-31 above, and further in view of Osuna-Diaz et al.

Juliano fails to teach a detente.

Osuna-Diaz et al teaches a threading (24, 36) that locks the heater (28) into the place in relation to the nozzle. Instead of a detente being utilized to lock the substrate into position, one skilled in the art would recognize other fastening means including threads to hold a removable substrate into position surrounding a nozzle. It would have

been obvious for the contacts to be situated so that when the substrate is locked into position that the contact pads would be in contact for the heater to work.

It would have been obvious to one of ordinary skill in the art to modify Juliano with threads to place and lock a heater into place surrounding a nozzle as taught by Osuna-Diaz because it allows for the substrate to be removed and replace for ease of maintenance of the apparatus.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Juliano et al in view of Riley as applied to claims 1-3, 7-9, 14-19, 22, and 28-31 above, and further in view of Goldwin (EP 0963829 A1).

Juliano fails to teach the connector housing having a key for slidably engaging a longitudinal slot in the substrate.

Goldwin teaches an injection molding heater around a nozzle (130) comprising of a thin film heater (132) that has a connector (138), or key, that ensures the heater stays connected to the nozzle (Fig. 14A). One skilled in the art recognizes the above view of the nozzle and heater that the connector would be in a slot of the heater for engagement. The connector and slot also inherently ensures proper alignment of the heater with the nozzle for any desired configuration such as aligning with contact pads.

It would have been obvious to one of ordinary skill in the art to modify Juliano with slot and key as taught by Goldwin because it ensures interchangeable heaters to the nozzle that can be aligned accordingly.

8. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Juliano et al in view of Riley as applied to claims 1-3, 7-9, 14-19, 22, and 28-31 above, and further in view of Shipley.

Juliano fails to teach photoforming.

Shipley teaches photoforming of a dielectric element (Col. 5, lines 31-35) in a multiplayer circuit board and the photoform of openings (Col. 5, lines 24-25). One skilled in the art would recognize the use of photoforming for producing a layer onto another, in this case the resistive layer onto the dielectric layer.

It would have been obvious to one of ordinary skill in the art to modify Juliano with photoforming as taught by Shipley because it provides a method of formation of layers with photoimaging that allows for formation of multilayers of higher density using photoimaging techniques (Col. 4, lines 23-30).

9. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Juliano et al in view of Riley as applied to claims 1-3, 7-9, 14-19, 22, and 28-31 above, and further in view of Bottari et al.

Juliano fails to teach laser etching.

Bottari teaches the formation of a wire trace pattern with the use of laser etching or some other technique [0018]. One skilled in the art recognizes the employment of the well known technique of laser etching in the formation of integral wiring traces.

It would have been obvious to one of ordinary skill in the art to modify Juliano with laser etching as taught by Bottari because it provides a reliable and less labor intensive assembly can be formed.

Response to Arguments

10. Applicant's arguments filed 2/13/03 have been fully considered but they are not persuasive. The applicant's argument primarily concentrates on the screen printing on non-flat substrates. That Juliano teaches from the use of screen printing for non-flat substrates and Riley does not give examples of non-flat substrates. However, Riley teaches the use of screen printing on substrates and while there are not specific examples given on non-flat surfaces, only a portion of the substrate is viewed. Riley discusses the formation on layers and of circuits. They do not teach away from non-flat surfaces. Most importantly, the structure can be produced other than screen printing as taught by Juliano. That the structure is formed by screen printing is a product by process. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted).

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hepler et al.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel S. Luk whose telephone number is (703) 305-1558. The examiner can normally be reached on Monday through Friday 8 to 4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on (703) 308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

E.L.
May 14, 2003

W. L. WALKER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

Notice of References Cited

Application/Control No.	Applicant(s)/Patent Under Reexamination	
09/596,549	BOOTH ET AL.	
Examiner	Art Unit	Page 1 of 1
Emmanuel S. Luk	1722	

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-5334006	08-1994	Hepler et al	425/190
	B	US-4787836	11-1988	Osuna-Diaz et al	425/190
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

213201.00054

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	
Andrew BOOTH, et al.	Examiner: Emmanuel S. Luk
Serial No.: 09/596,549	Art Unit: 1722
Filed: June 19, 2000	
For: THICK FILM HEATER APPARATUS	August 19, 2003

AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action mailed on May 19, 2003 in the above-identified application, please amend the above-identified application as follows:

IN THE CLAIMS:

1. (Currently Amended) A thick-film electric heater, comprising:

a) a thermally conductive non-flat substrate surface;

b) a silk-screened dielectric layer applied on said substrate surface;

c) a resistive layer applied on said dielectric layer thereby forming a circuit for the generation of heat, the resistive layer having at least one resistive trace made of thick film ink in a pattern that is discontinuous circumferentially;

d) at least a pair of silk-screened contact pads applied in electrical communication with said resistive layer for electrical connection to a power source; and

e) an insulation layer applied over said resistive layer.

2. (Previously Presented) The heater of claim 1, further comprising a connector housing for connection of a contact to each of said contact pads.

3. (Previously Presented) The heater of claim 1, where said non-flat surface is cylindrical.

4. (Original) The heater of claim 1, where said substrate further comprises a longitudinal slot running the entire length of said substrate.

5. (Previously Presented) The heater of claim 1, where said resistive layer further comprises at least one low-resistance conductive trace in electrical communication with the at least one resistive trace, thereby forming an optimized heating generating patter.

6. (Cancelled)

7. (Original) The heater of claim 5, where said conductive trace is silk-screened on said dielectric layer.

8. (Original) The heater of claim 1, where said resistive layer is silk-screened on to said dielectric layer.

9. (Original) The heater of claim 1, where said resistive layer is direct printed on to said dielectric layer.

10. (Previously Presented) The heater of claim 2, where said connector housing further comprises a locking detent that engages a locating hole on said substrate.

11. (Original) The heater of claim 10, where said locking detent is selectably removable from said locating hole.

12. (Original) The heater of claim 10, where said detent and said locating hole are in a predetermined arrangement relative to said contacts, thereby ensuring electrical communication of said contacts to said contact pads when said detent engages said hole.

13. (Previously Presented) The heater of claim 2, where said connector housing further comprises a key for slidably engaging a longitudinal slot in said substrate, thereby aligning radially said contacts with said contact pads.

14. (Previously Presented) The hater of claim 2, where said connector housing is made from a ceramic material.

15. (Original) The heater of claim 1, where said substrate is a nozzle body.

16. (Original) The heater of claim 1, where said substrate is made from steel.

17. (Original) The heater of claim 1, where said dielectric layer has a dielectric strength between 1000 VAC to 1500 VAC and an insulation resistance of at least 100 mega-ohms.

18. (Original) The heater of claim 1, where said substrate and said dielectric layer and said resistive layer and said insulation layer have substantially the same coefficient of thermal expansion.

19. (Original) The heater of claim 18, where said substrate has a slightly lower coefficient of thermal expansion than said dielectric, resistive and insulation layer.

20. (Original) The heater of claim 1, where said resistive layer is applied to said dielectric layer by photoforming.

21. (Original) The heater of claim 1, where said resistive layer is formed by laser or abrasive etching.

22. (Previously Presented) The heater of claim 2, where said contact is made from gold plated steel.

Claims 23-27 (Withdrawn)

28. (Currently Amended) An injection mold runner nozzle having a co-axially disposed cylindrical heater comprising:

a) a cylindrical, thermally conductive substrate having a smaller coefficient of thermal expansion than that of said nozzle, thereby causing said substrate to clamp onto said nozzle as said nozzle and said substrate heat up;

b) a dielectric layer applied on said substrate;

c) a resistive layer applied on said dielectric layer thereby forming an electrical circuit for heat generation, the resistive layer having at least one resistive trace made of thick film ink in a pattern that is discontinuous circumferentially around the substrate;

d) at least a pair of contact pads applied in electrical communication with said resistive layer for electrical connection to a power source; and

e) an insulation layer applied over said resistive layer.

29. (Previously Presented) The nozzle of claim 28, wherein the heater further comprises an annular connector housing that slidably engages said substrate for mechanical connection of a contact to each said contact pads.

30. (Currently Amended) A thick-film electric heater, comprising:

a) a thermally conductive non-flat substrate surface;

b) a dielectric layer applied on said substrate surface;

c) a resistive layer applied on said dielectric layer thereby forming a circuit for the generation of heat, the resistive layer having at least one resistive trace made of thick film ink in a pattern that is discontinuous circumferentially;

d) at least a pair of contact pads applied in electrical communication with said resistive layer for electrical connection to a power source; and

e) an insulation layer applied over said resistive layer.

31. (Previously Presented) The heater of claim 30, where said at least one resistive trace is a plurality of traces configures to optimize an axial thermal profile of the heater.

REMARKS

Claims 1-5, 7-22 and 28-31 are pending, with Claims 1, 28, and 30 being independent. In this Amendment, Claims 1, 28, and 30 have been amended. All amendments presented herein are being made for reasons of clarity with respect to the specification and drawings, and not for reasons relating to the statutory requirements for patentability.

The Rejections

All of the pending claims stand rejected under 35 USC 103(a) as being unpatentable over combinations of Juliano et al., Manov et al., and Riley. Applicants respectfully traverse all art rejections.

The Cited Art

Juliano discloses a cylindrical nozzle heater having a resistive layer that is applied using the fine line direct writing technique in a circumferentially continuous spiral disposed over the length of the substrate. The dielectric layers and resistive layers of the heater are formed of thick film inks.

Manov discloses a heater formed by a ribbon element sandwiched between two plastic sheets joined together as a unit, where the sheets may be cylindrical, and the ribbon element may exhibit a circumferentially discontinuous pattern. The ribbon element is made from amorphous metallic material, not thick

film ink. The pattern of the ribbon element in Manov allows both ends of the trace to be provided on the same side of the heater.

Riley discloses use of the silk screening technique to apply circuit board patterns onto flat substrates.

The Cited Art Cannot Be Properly Combined

When applying 35 U.S.C. 103 to a claimed invention, the following requirements apply:

(A) The claimed invention must be considered as a whole;

(B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;

(C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and

(D) The standard under which a determination of obviousness is made is the reasonable expectation of success standard.

See Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986).

Under this standard, the Juliano reference cannot be properly combined with either or both of Manov and/or Riley. As will be set forth fully below, Applicants submit that there is no teaching in any of Juliano, Manov, or Riley to support their combination, and that in fact these references teach away from such a combination. Any attempt at combination impermissibly relies upon the hindsight provided by Applicants' disclosure.

Juliano points out that "the standard screen printing and decal printing processes are not capable of producing a continuous circumferential spiral trace pattern. See column 4, lines 17-19. Juliano further discusses screen printing of nozzle heaters, stating: "[t]his method involves flat ceramic substrates and a printed circuit pattern thereon by means of screen printing." See column 3, lines 23-25. It goes on to further describe how the flat sheet could be wrapped around a tubular object to produce a tubular heating element. "However, it cannot produce a continuous circumferential spiral trace pattern." See column 3, lines 37-38. There is no suggestion that a circumferentially discontinuous pattern would be beneficial for a resistive trace made with ink. Juliano in several places points out the desirability of producing a continuous circumferential spiral trace pattern using thick film ink, and in comparing that to the known art at the time, points out the undesirability of any process or result that would not produce that pattern. Therefore, no teaching or suggestion of using a circumferentially discontinuous trace pattern of thick film ink is found anywhere in Juliano.

Manov has been improperly combined with Juliano to provide the teaching of a circumferentially discontinuous pattern to arrive at the claimed invention. The heater in Manov uses a ribbon element sandwiched between two plastic sheets joined together as a unit, and the sheets may be cylindrical. See column 8, lines 50-53. While the pattern produced by the ribbon is circumferentially discontinuous, it is made from amorphous metallic material, not thick film ink. There is no teaching or suggestion in Manov that such a pattern be formed of thick film ink, or that such a pattern be applied to a non-flat substrate by the silk screening

method. One skilled in the art at the time of the invention would not combine these divergent references to arrive at the claimed invention, nor would there be any motivation to do so. It is suggested in paragraph 3 of the Office Action that the motivation to modify Juliano to produce a discontinuous circumferential pattern as taught by Manov may be found because Manov allows the ends of the trace to be located on the same side of the heater. However, Juliano already provides that feature (see Fig. 3) using two continuous circumferential traces: "The spiral pattern is formed by two parallel continuous circumferential spiral line traces which meet at a 180 degree bend 43 on the opposite end from the starting point. This allows the power terminal pads 50 to be printed on the same end of the heater for easy access of terminal connections." Column 6, lines 23-28. There is no need or motivation for one skilled in the art to apply the discontinuous circumferential pattern of Manov to Juliano, solely to allow the ends of the trace pattern to be located at the same end of the heater. Juliano and Manov cannot be properly combined.

Riley teaches the use of silk screening on flat surfaces to produce electrical circuits. Riley does not teach or suggest silk screening on anything other than flat substrates. Even though the sample shown in Riley is small, it is improper to make the assumption set forth in the Office Action that use of a small sample supports use of silk screening on large non-flat surfaces (apparently based on the reasoning that a large, non-flat surface can be broken down into many smaller flat surfaces). Such unsupported theories of the art are based on the hindsight afforded by Applicants' disclosure. The reality is that there had been no disclosure or suggestion in any of the cited art of silk screening on anything other than flat

substrates at the time the claimed invention was made. To silkscreen onto a non-flat surface would not have been merely a matter of choice for one skilled in the art, as it was a significant deviation from the state-of-the-art at the time the invention was made. "It is difficult but necessary that the decisionmaker forget what he or she has been taught . . . about the claimed invention and cast the mind back to the time the invention was made (often as here many years), to occupy the mind of one skilled in the art who is presented only with the references, and who is normally guided by the then-accepted wisdom in the art." W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). The then-accepted wisdom in the silk-screening art was that silk screening was a technique suited for printing on flat objects. Artistic prints, tee shirts, and printed circuits were all silk screened onto flat materials. Even in Juliano discussion of silk screening involved flat substrates with the silkscreened material being transferred like a decal. Riley teaches the use of silk screening on flat surfaces to produce electrical circuits, and does not teach our suggest silk screening on anything other than flat substrates. It is suggested in the Office Action that motivation existed for one skilled in the art to use the silk screening process on the round substrate of Juliano because it would allow for application of multiple layers of materials. However, Juliano provides for layering of materials in Fig. 6a (column 4, lines 46-48 and column 7 lines 17-18) and also column 6, lines 50-53, where it is discussed that the dielectric material can be applied in several thin layers generated by several passes of the fine film printing head. There is therefore no motivation to combine the teachings of Riley with Juliano.

Accordingly, Applicants request that all rejections based on the improper combination of Juliano and Manov and Juliano and Riley be withdrawn.

The Cited Cases

In re Thorpe was relied upon to support the rejection of the claims on the grounds that the product is the same as or obvious in view of the products shown in the cited art. In re Thorpe involved claims for a process by which two chemical ingredients (metal oxide and carboxylic acid) were added to a mixture, and the two ingredients reacted during the process to produce a metal carboxylate. The prior art process added more expensive pre-reacted metal carboxylate to the mixture. The product-by-process claims were rejected because the end product, in both the claims and the prior art, contained metal carboxylate. The rationale was based on the fact that although the metal carboxylate was not directly added (it was instead produced *in situ*) this difference did not change the end product.

In re Dailey was relied upon to support the assertion that the change from silk screening on a flat surface to silk screening on a non-flat or cylindrical surface is obvious as a mere change in form or shape. In In re Dailey, the court held that the particular configuration of the claimed disposable plastic nursing container was a matter of choice that a person of ordinary skill in the art would have found obvious, in the absence of persuasive evidence that the particular configuration of the claimed container was significant. No evidence was presented that that the shape of the container was in fact significant in any way.

The Cited Cases Are Inapplicable

As will be pointed out below, the heavy reliance in the Office Action on the holdings in In re Thorpe and In re Dailey is misplaced, because legal precedent can provide the rationale to support an obviousness rejection only if the facts in the cited cases are similar to those in the application at hand. The facts in these cases are so remote from those of the present application that it is improper to base the outstanding rejections on their holdings.

For the holding of In re Thorpe to apply to the presently claimed invention, Applicants' claimed heater would have to be the same as the prior art, or obvious from the prior art. The claimed heater has a non-flat substrate on which dielectric layers and a resistive layer are applied by silk screen printing, where the resistive layer has a trace pattern that is discontinuous circumferentially. In contrast, Juliano discloses a cylindrical nozzle heater having a resistive layer that is applied using the fine line direct writing technique in a circumferentially continuous spiral disposed over the length of the substrate. Though the product of the claimed invention and the product of Juliano are both heaters having non-flat substrates with dielectric layers and resistive layers made of thick film inks, the presently claimed invention features a circumferentially discontinuous resistive layer formed by silkscreening, whereas Juliano has a circumferentially continuous spiral resistive layer formed by the fine line direct writing process. Manov and Riley disclose even less related products.

Unlike In re Thorpe, where the claimed process and the prior art process both produced exactly the same end product, here the different processes

produce substantially different end products. The process of producing these heaters, with each having its own distinctive trace pattern, is very much related to the type of pattern produced. The fine line direct writing process produces a continuous spiral pattern. As the substrate is rotated, the pen is advanced along the length of the substrate at a desired rate, much like a lathe, to produce the desired circumferentially continuous spiral pattern. In contrast, the silk screening process deposits a layer of thick film having a discontinuous pattern over the length and circumference of the nozzle, to produce the desired non-circumferentially continuous resistive trace pattern. When the cited art is examined for any suggestion that it would be beneficial to make a heater using a Applicants' disclosed process of silk screening the resistive trace on a non-flat substrate, where the trace has a circumferentially discontinuous pattern, none can be found.

Because the facts of In re Thorpe are so far afield from the facts of the present application, reliance upon In re Thorpe as the basis for the rejection of the claims is improper.

For the holding of In re Dailey to be applicable to the presently claimed invention, it would have to be a mere matter of choice to use silk screening to apply the resistive layer to a flat versus a non-flat surface. However, as discussed above, the shape of the substrate being silk screened is very significant, in direct contrast to the situation presented in In re Dailey. It was well known at the time the invention was made how to silk screen on flat surfaces, but at the time of the invention, it was thought to be extremely impractical or impossible to silk screen non-flat surfaces. Thus, the "matter of choice" of In re Dailey does not apply to the

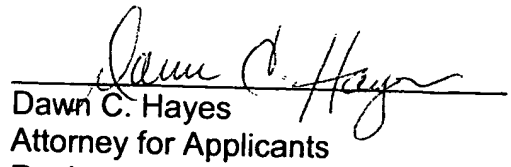
present case because using a flat or non-flat surface for silk screening was not merely a matter of choice, as one skilled in the art would not have known how to use such a technique. Choosing one of many particular configuration for a nursing bottle in In re Dailey is not an analogous situation. Therefore, reliance upon In re Dailey as the basis for the rejection of the claims is also improper.

Conclusion

Accordingly, in view of the amendments and remarks set forth above, Applicants submit that this application is in condition for allowance, and respectfully request prompt issuance of a notice thereof.

Applicants' undersigned agent may be reached by telephone at (202) 625-3500. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/596,549	06/19/2000	Andrew Booth	H-525US	2122

27160 7590 01/08/2004

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EXAMINER	
LUK, EMMANUEL S	
ART UNIT	PAPER NUMBER
1722	

DATE MAILED: 01/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/596,549	BOOTH ET AL.
	Examiner	Art Unit
	Emmanuel S. Luk	1722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 September 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-22 and 28-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-22 and 28-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-4, 7-9, 14-21 and 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al in view of Manov et al and Schmidt.

Lin teaches an aluminum substrate thick film heater having ceramic oxide dielectric insulator and the substrates having resistive layers. Lin also teaches the heating element circuit pattern (108) is applied over the dielectric layer (106) that ends in the terminal foils (110) for connection to a power source, an insulative layer (114) is applied over the other layers, and thick film ink (Col. 5, lines 21-39). Lin also teaches the substrates and the circuit patterns:

> In FIG. 2 a circuit element is shown applied over a flat substrate. In FIG. 3 a circuit pattern is shown over a tubular substrate. A plurality of other substrate and circuit pattern designs may be implemented. For example, the substrate

could have irregular contours and the circuit patterns can have irregular continuous traces. (Col. 6, lines 34-40).

Lin fails to teach a trace in pattern that is discontinuous circumferentially and longitudinal slot.

Lin teaches a circuit design on a substrate (Fig. 2) and also a substrate design on a heater body (Fig. 3). Manov teaches teaches the creation of a trace pattern on a heater that is discontinuous circumferentially on the heater body and a slot runs longitudinal to the heater body.

Schmidt teaches a band heater clamp arrangement for an injection molding machine. Schmidt teaches an inner sleeve having an axial slot that extends through the entire length that allows for the inner sleeve to expand and close as temperature rises, thus allowing for the different thermal expansion rates between the inner sleeve and outer sleeve (Col. 2, lines 41-47).

Lin teaches formation of the pattern on both a flat substrate and on a heater body that is cylindrical, the design of the pattern can be designed as desired and to accommodate for features of the substrate.

It would have been obvious to one of ordinary skill in the art to modify Lin with a discontinous circumferential design as taught by Manov because it compensates the design for the slot that runs longitudinal to the heater body and a slot as taught by Schmidt because it allows for heater to compensate for the thermal expansion of the substrate that is located on the inner sleeve.

In regards to claims 17-19, the dielectric strength of the dielectric layer, the insulation resistance and the thermal expansion coefficients are cause effective variables that can be determined through routine experimentation. It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as through routine experimentation in the absence of a showing of criticality in the claimed properties such thermal expansion coefficient, resistance and dielectric strength. *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

In regards to claim 31, the plurality of traces it would have been obvious to one of ordinary skill in the art to have a plurality of traces for a multiplied effect, in this case for improved heating. *In re Harza*, 124 PQ 378 (CCPA 1960). It would have been obvious to one skilled in the art to find the optimized pattern.

In regards to claims 20 and 21, the respective layer being formed by photoforming, laser etching and abrasive etching is process limitations that are not given weight in an apparatus claims because it does not provide further structural limitations.

4. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Manov and Schmidt as applied to claims 1-4, 7-9, 14-21 and 28-31 above, and further in view of Riley.

Lin fails to teach the contact is made from gold plated steel.

Riley teaches a thick film circuit element having substrates and layers that are formed via silk screen (Col. 3, line 67) onto the surfaces of the substrate (12). The substrates can be made of ceramic (Col. 3, line 65), other substrates include stainless steel (Col. 2, lines 65-66) and noble metals, such as gold (Col. 1, line 41) for use in the circuit. Riley teaches the use of a variety of different materials in the substrates, this also suggests use in parts other than substrates including the housing and contact pads, such as a ceramic housing and gold plated steel on the contact pads.

It would have been obvious to one of ordinary skill in the art to modify Lin with contact as taught by Riley because it allows for the desired properties of the contact for the heater.

5. Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Manov et al and Schmidt as applied to claims 1-4, 7-9, 14-21 and 28-31 above, and further in view of Collins.

Lin fails to teach the resistive layer comprises of a resistive trace and a lower-resistance conductive trace.

Collins teaches the formation of a thick film resistor and utilizes a resistive layer and a low-resistance conductive trace:

> Each of the networks was fabricated on insulative alumina substrates by direct writing of the resistive line pattern r using commercially available ruthenium-based inks of different compositions (different sheet resistivities), whereby each pattern was written to achieve a different final effective width of the line r for the resistor segments. Both segments of each resistor network were written with one and the same line width. The effective line widths of the low resistance segments were achieved by writing a selected number of resistive lines in a parallel configuration between conductive terminal bars connected to respective conductive terminations. (Col. 6, lines 15-26)

The low resistance segments being the conductive trace, thereby low resistance, that is located with resistive lines (resistive trace) that forms the resistive layer, the patterning allows for optimum use of the resistive layer.

It would have been obvious to one of ordinary skill in the art to modify Juliano with a resistive layer comprised of a resistive trace and a conductive trace as taught by Collins because it allows for optimum configuration for the resistive trace pattern in the heater.

6. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Manov et al and Schmidt as applied to claims 1-4, 7-9, 14-21 and 28-31 above, and further in view of Osuna-Diaz et al.

Lin fails to teach a detente.

Osuna-Diaz et al teaches a threading (24, 36) that locks the heater (28) into the place in relation to the nozzle. Instead of a detente being utilized to lock the substrate into position, one skilled in the art would recognize other fastening means including threads to hold a removable substrate into position surrounding a nozzle. It would have been obvious for the contacts to be situated so that when the substrate is locked into position that the contact pads would be in contact for the heater to work.

It would have been obvious to one of ordinary skill in the art to modify Lin with threads to place and lock a heater into place surrounding a nozzle as taught by Osuna-Diaz because it allows for the substrate to be removed and replace for ease of maintenance of the apparatus.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Manov et al and Schmidt as applied to claims 1-4, 7-9, 14-21 and 28-31 above, and further in view of Goldwin (EP 0963829 A1).

Lin fails to teach the connector housing having a key for slidably engaging a longitudinal slot in the substrate.

Goldwin teaches an injection molding heater around a nozzle (130) comprising of a thin film heater (132) that has a connector (138), or key, that ensures the heater stays connected to the nozzle (Fig. 14A). One skilled in the art recognizes the above view of the nozzle and heater that the connector would be in a slot of the heater for engagement. The connector and slot also inherently ensures proper alignment of the heater with the nozzle for any desired configuration such as aligning with contact pads.

It would have been obvious to one of ordinary skill in the art to modify Lin with a slot and key as taught by Goldwin because it ensures interchangeable heaters to the nozzle that can be aligned accordingly.

Response to Arguments

8. Applicant's arguments with respect to claims 1-5, 7-22 and 28-31 have been considered but are moot in view of the new ground(s) of rejection.

The applicants' arguments concerning Juliano, Manov, Riley and the cited cases have been considered. However, a new rejection with Lin in view of Manov and Riley deals addresses many of the issues including the use of cited cases and to address the

new claimed structure of thick film ink. The Lin reference is a heater having thick film ink, the layers and the pattern designs that would be obvious over the claimed structure.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel S. Luk whose telephone number is (571) 272-1134. The examiner can normally be reached on Monday-Thursday 7 to 4 and alternate Friday.

Notice of References Cited	Application/Control No. 09/596,549	Applicant(s)/Patent Under Reexamination BOOTH ET AL.	
	Examiner Emmanuel S. Luk	Art Unit 1722	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,222,166 B1	04-2001	Lin et al.	219/538
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

213201.00054 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	)	
	)	
Andrew BOOTH, et al.	)	Examiner: Emmanuel S. Luk
	)	
Application No.: 09/596,549	)	Art Unit: 1722
	)	
Filed: June 19, 2000	)	
	)	March 8, 2004
For: THICK FILM HEATER APPARATUS	)	

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REQUEST FOR RECONSIDERATION OF ISSUANCE OF FINAL REJECTION

Sir:

In response to the Final Office Action mailed on January 8, 2004, Applicants hereby respectfully request that the Examiner reconsider, and withdraw, the finality of the new rejections set forth therein. When a new ground of rejection is issued, the rejection should not be made final unless that new ground of rejection was (1) "necessitated by applicant's amendment of the claims" or (2) was "based on information submitted in an information disclosure statement filed during the period set forth in 37 C.F.R. § 1.97(c) with the fee set forth in 37 C.F.R. § 1.17(p)." *See* MPEP 706.07(a). For the reasons to be discussed below, Applicants submit that neither of these two criteria were met in this instance.

REMARKS

Applicants responded to the Office Action issued May 19, 2003, with an Amendment dated August 19, 2003, in which minor amendments were made to the independent claims, and detailed arguments were presented to rebut the obviousness rejections advanced in the Office Action. No Information Disclosure Statements have been filed since the issuance of that Office Action.

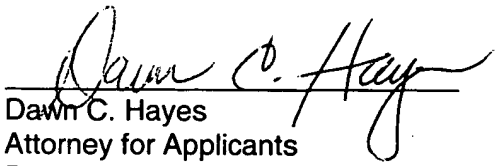
Applicants' claim amendments merely specified that the resistive trace was "made of thick film ink." The primary reference cited in the rejections set forth in the Office Action issued May 19, 2003, was Juliano, which disclosed the use of thick film inks to form a resistive layer. In the new grounds of rejection, Lin et al. also discloses the use of thick film inks to form resistive elements. Applicants therefore submit that the amendments to the claims to include the feature that the resistive trace be "made of thick film ink" did not require that the new grounds of rejection be applied.

Applicants believe that it was their arguments regarding the lack of proper motivation to combine Juliano, Manov, and Riley, and their arguments rebutting the applicability of the case law cited in support of the obviousness rejections advanced in the Office Action issued May 19, 2003, that made the prior rejection untenable. Applicants submit that the new grounds of rejection were in fact issued as a response to Applicants' arguments.

Accordingly, although Applicants made incidental, minor amendments to the claims, those claim amendments did not necessitate the new rejections based on Lin that were first asserted in the Final Office Action dated January 8, 2004. Applicants therefore request that the finality of the Office Action be withdrawn, so that Applicants may have a full opportunity to respond to the new grounds of rejection. In particular, Applicants may wish to submit evidence to establish an invention date prior to the August 9, 1999 filing date of the Lin et al. patent, thereby removing it as a reference.

Applicants' undersigned attorney may be reached by telephone at (202) 625-3500. All correspondence should continue to be directed to our address as listed below.

Respectfully submitted,



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Doc #:WAS01 (213201-00054) 41533976v1:03/08/2004/Time:9:53

Confirmation Report–Memory Send

Time : Mar-08-04 03:39pm
Tel line 1 :
Name : KATTEN MUCHIN ZAVIS ROSENMAN

Job number : 663
Date : Mar-08 03:38pm
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KMZ Rosenman
KATTEN MUCHIN ZAVIS ROSENMAN
1025 Thomas Jefferson Street, Suite 700
Washington, DC 20007-5201
202.625.3600 office 202.298.7570 fax

Facsimile

To	Company	Fax Number	Phone Number
1. Examiner E. S. Luk	USPTO	703-872-9306	

Date	Client/Matter Number
March 8, 2004	213201.00054
From	Attorney Number
Dawn C. Hayes	33852
Phone	Fax
202.625.3549	202.339.8267

Total number of pages, including cover letter: 4
If you do not receive all of the pages, please call: 202.625.3515

Comments

Re: Request for Reconsideration of Issuance of Final Rejection
U.S. Appln. No. 09/596,549

For Messenger Department Use Only

Your fax has been sent. Attached is your original.

Date Time

Signature

Important

4 Wrapt

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...ON NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/596,549	06/19/2000	Andrew Booth	H-525US	2122

27160 7590 04/08/2004

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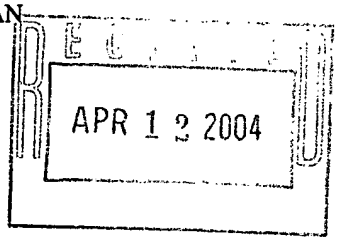

EXAMINER	
LUK, EMMANUEL S	
ART UNIT	PAPER NUMBER
1722	

DATE MAILED: 04/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

2/3201-00054

CKL

Advisory Action	Application No.	Applicant(s)	
	09/596,549	BOOTH ET AL.	
	Examiner	Art Unit	
	Emmanuel S. Luk	1722	

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 08 March 2004 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

PERIOD FOR REPLY [check either a) or b)]

a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.

b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection. ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. ☐ A Notice of Appeal was filed on _____. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.

2. ☐ The proposed amendment(s) will not be entered because:

   (a) ☐ they raise new issues that would require further consideration and/or search (see NOTE below);

   (b) ☐ they raise the issue of new matter (see Note below);

   (c) ☐ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or

   (d) ☐ they present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: _____.

3. ☐ Applicant's reply has overcome the following rejection(s): _____.

4. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

5. ☒ The a)☐ affidavit, b)☐ exhibit, or c)☒ request for reconsideration has been considered but does NOT place the application in condition for allowance because: *see attached note*.

6. ☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.

7. ☒ For purposes of Appeal, the proposed amendment(s) a)☐ will not be entered or b)☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

   The status of the claim(s) is (or will be) as follows:

   Claim(s) allowed: _____.

   Claim(s) objected to: _____.

   Claim(s) rejected: *1-5,7-22 and 28-31*.

   Claim(s) withdrawn from consideration: _____.

8. ☐ The drawing correction filed on _____ is a)☐ approved or b)☐ disapproved by the Examiner.

9. ☐ Note the attached Information Disclosure Statement(s)(PTO-1449) Paper No(s). _____.

10. ☐ Other: _____

DETAILED ACTION

1. Applicant's arguments filed 4/8/2004 have been fully considered but they are not persuasive. The addition of the resistive trace to made from 'thick film ink', this is a new structural feature and this change has ~~allowed for~~ permitted grounds for new rejection. Several of the claims prior to the amendment merely mentions thick film heater in the preamble with no references to a specific structure of thick film ink and independent claim 28 actually has no mention at all for a thick film heater, let alone a thick film ink.

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel S. Luk whose telephone number is (571) 272-1134. The examiner can normally be reached on Monday-Thursday 7 to 4 and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on (571) 272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EL

W. L. WALKER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700